Kardiologia Polska 2016; 74, 11: 1327–1331; DOI: 10.5603/KP.a2016.0109 ISSN 0022–9032

ARTYKUŁ ORYGINALNY / *ORIGINAL ARTICLE*

A study to evaluate the prevalence and determinants of stress coping strategies in heart failure patients in Poland (CAPS-LOCK-HF sub-study)

Łukasz J. Krzych[1], Maciej T. Wybraniec[2], Agnieszka Siennicka[3, 4, 5], Belinda Lees[6], Kinga Gościńska-Bis[7], Maciej Wójcik[8], Robert Błaszczyk[8], Filip M. Szymański[9], Michał Orszulak[2], Błażej Michalski[10], Karol Kamiński[11], Grzegorz Kopeć[12], Anna Hrynkiewicz-Szymańska[13], Ewa A. Jankowska[4, 5, 14]

[1]Department of Anaesthesiology and Intensive Care, School of Medicine in Katowice, Medical University of Silesia, Katowice, Poland
[2]1st Department of Cardiology, School of Medicine in Katowice, Medical University of Silesia, Upper-Silesian Medical Centre, Katowice, Poland
[3]Department of Physiology, Wroclaw Medical University, Wroclaw, Poland
[4]Department of Cardiology, Centre for Heart Diseases, Military Hospital, Wroclaw, Poland
[5]Department of Heart Diseases, Wroclaw Medical University, Wroclaw, Poland
[6]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, England
[7]Department of Electrocardiology, Medical University of Silesia, Upper-Silesian Medical Centre, Katowice, Poland
[8]Department of Cardiology, Medical University of Lublin, Lublin, Poland
[9]1st Department of Cardiology, Medical University of Warsaw, Warsaw, Poland
[10]Department of Cardiology, Medical University of Lodz, Lodz, Poland
[11]Department of Cardiology, Medical University of Bialystok, Bialystok, Poland
[12]Department of Cardiac and Vascular Diseases, John Paul II Hospital, Jagiellonian University Medical College, Krakow, Poland
[13]Department of Cardiology, Hypertension and Internal Medicine, Medical University of Warsaw, Warsaw, Poland
[14]Laboratory for Applied Research on Cardiovascular System, Wroclaw Medical University, Wroclaw, Poland

Abstract

Background and aim: We aimed to evaluate the prevalence and determinants of different stress coping strategies in Polish patients suffering from heart failure with reduced ejection fraction (HFREF).

Methods: This manuscript is a sub-study of the CAPS-LOCK-HF multicentre psychological status assessment of patients with HFREF. Patients with > six-month history of HFREF and clinical stability for ≥ three months and left ventricular ejection fraction (LVEF) < 45% were enrolled in the study. Demographic and clinical variables were obtained from medical records, while a standardised Coping Inventory for Stressful Situations (CISS) was applied to all subjects.

Results: The study comprised 758 patients (599 men; 79%) with a median age of 64 years (IQR 58–71). Median LVEF was 33% (25–40). Subjects most commonly used task-oriented coping strategies (median CISS score 55 points; IQR 49–61), followed by avoidance (45 points; 39–50) and emotion-oriented coping strategies (41 points; 34–48). Distraction-based avoidance coping strategies (20 points; 16–23) were more pronounced than social diversion strategies (16 points; 14–19). Multiple regression analysis showed that higher New York Heart Association (NYHA) class and lower systolic blood pressure were independent predictors of task-oriented style. Emotion-oriented coping was more common among females and higher NYHA classes, and in patients who did not take angiotensin-converting enzyme inhibitors. Patients who used avoidance-oriented strategies were more frequently those in sinus rhythm on assessment and those who had less history of neoplastic disease.

Conclusions: Patients with HFREF most commonly use favourable task-oriented coping strategies. However, female patients and those with higher NYHA classes tend to use potentially detrimental emotion-oriented coping strategies.

Key words: coping inventory for stressful situations, CISS, stress coping, heart failure, HFREF

Kardiol Pol 2016; 74, 11: 1327–1331

Address for correspondence:
Maciej T. Wybraniec, MD, PhD, 1st Department of Cardiology, School of Medicine in Katowice, Medical University of Silesia, Upper-Silesian Medical Centre, ul. Ziołowa 47, 40–635 Katowice, Poland, tel: +48 32 359 88 90, fax: +48 32 2523032, e-mail: wybraniec@os.pl
Received: 20.04.2016 **Accepted:** 21.06.2016 **Available as AoP:** 08.07.2016

INTRODUCTION

The diagnosis of heart failure with reduced ejection fraction (HFREF) remains a considerable physical and psychological stressor [1], which triggers behavioural, cognitive, and emotional adaptation by patients. Adequate psychological response relies on a wide range of individual stress coping strategies. It has been postulated that a flexible approach with adjustment to the type of daily challenge, rather than a permanent single strategy, leads to more efficient stress coping [1].

In patients with chronic disease, emotion-oriented coping mechanisms were shown to be related to a higher prevalence of depression [2] and a lower ability to overcome heart failure (HF)-related challenges, and importantly, reduced therapy-compliance [3]. Avoidance-oriented stress coping mechanisms among patients with severe HF has been linked to a greater extent of anger, anxiety, and depression [4]. In consequence, these stress coping strategies may result in suboptimal outcomes of HF treatment. It has been proposed that a predominantly task-oriented approach, which allows patients to concentrate on lifestyle interventions and possibly suppress emotional exhaustion, may improve the outcomes of HF treatments [5].

Therefore, this current study aimed to assess the prevalence and determinants of different stress coping strategies in patients with HFREF.

METHODS

This paper is a sub-study of the CAPS-LOCK-HF study (Complex Assessment of Psychological Status LOCated in Heart Failure), which has been described in detail elsewhere [6]. Briefly, between 2012 and 2013, consecutive patients who were hospitalised or visiting outpatient clinics in 11 cardiology centres in Poland were enrolled. Inclusion criteria were as follows: > six-month documented history of HFREF, clinical stability for ≥ three months, and left ventricular ejection fraction (LVEF) < 45%. Demographic and clinical variables were obtained from medical records. A standardised Coping Inventory for Stressful Situations (CISS) was administered on hospital admission or during a routine ambulatory visit [7]. The CISS instrument assesses how individuals cope with stressful situations and has three "coping" dimensions: "Task", "Emotion", and "Avoidance". The Avoidance dimension has two sub-scales: "Distraction" and "Social Diversion".

Statistical analysis

Statistical analysis was performed using MedCalc v. 14.8.1 (MedCalc Software, Ostend, Belgium). Quantitative variables were expressed as median and interquartile range (IQR). Qualitative variables were expressed as absolute values and percentages. Between-group differences for normally distributed quantitative data were assessed using Student t-tests or analysis of variance, and Mann-Whitney U-tests or Kruskal-Wallis tests were used for non-normally distributed variables. Distribution was verified using a Shapiro-Wilk test. For qualitative variables, the Mantel-Haenszel χ^2 or Fisher's exact tests were applied. Spearman rank coefficients of correlation were calculated for appropriate quantitative data. Determinants of stress-coping mechanisms were initially evaluated by means of bivariate comparisons and analysis of correlation, and then variables with a 'p' value < 0.1 (and R ≥ 0.1 for correlation) were subjected to a multivariate stepwise multiple regression model. A 'p' value < 0.05 was considered significant.

RESULTS

The CAPS-LOCK-HF sub-study group comprised 758 patients: 159 (21%) females and 599 (79%) males. Median age (IQR) was 64 (58–71) years. The number of patients in each New York Heart Association (NYHA) class (from I to IV) were: 35 (5%), 414 (55%), 283 (37%), and 26 (3%), respectively. The majority of patients (n = 460, 61%) had an ischaemic aetiology of HF. Median LVEF was 33% (25–40%). Median duration of HF symptoms was 4 (2–10) years. Detailed characteristics of this group have been published previously [6].

The highest score in the CISS questionnaires for this group of patients was for a task-oriented approach (median; IQR: 55; 49–61 points), demonstrating that it was the most commonly used stress coping strategy. It was followed by avoidance-oriented (45; 39–50 points) and emotion-oriented (41; 34–48 points) strategies. The distraction sub-scale of the avoidance-oriented stress management strategy was more commonly used than the social diversion one (20; 16–23 vs. 16; 14–19 points, respectively).

In multiple regression analysis we found that the score for task-oriented strategies was lower for those patients with higher NYHA classes and was negatively correlated with systolic blood pressure, whereas the score for emotion-oriented strategies was higher in females, patients with higher NYHA classes, and those not taking angiotensin-converting enzyme inhibitors and/or angiotensin-receptor blockers. Higher scores for avoidance-oriented strategies were found in patients in sinus rhythm on assessment but lower in those who had a history of (any) neoplasm. A higher score in the distraction sub-scale was also found in patients with sinus rhythm on assessment and those with no history of neoplastic disease, and was independently associated with higher NYHA classes. A higher score in the social diversion sub-scale was observed in females and in patients with no history of implantable cardioverter-defibrillator implantation. The results of the regression analysis are presented in Table 1. CISS consecutive scores by NYHA class are shown in Figures 1A–E.

DISCUSSION

CAPS-LOCK-HF is the first large study designed to investigate the range of psychological and emotional characteristics of patients with HFREF in Poland. This current sub-study

Table 1. Significant determinants of different stress management strategies — multivariate analysis

Stress coping strategy	Determinant	Coefficient of regression ± SD	P
Task-oriented	NYHA class (I to IV)	0.84 ± 0.29	< 0.0001
	Systolic blood pressure (per 1 mm Hg increase)	–0.06 ± 0.02	< 0.01
Emotion-oriented	Gender (female = 0/male = 1)	–2.29 ± 0.94	0.01
	NYHA class (I to IV)	1.42 ± 0.60	0.02
	Treatment with ACEI/ARB (NO = 0/YES = 1)	–2.85 ± 1.26	0.02
Avoidance-oriented	HR rhythm (sinus = 1/atrial fibrillation = 2/paced = 3)	–1.25 ± 0.43	0.004
	History of any neoplasm (NO = 0/YES = 1)	–3.58 ± 1.35	0.01
Distraction	NYHA class (I to IV)	0.84 ± 0.29	< 0.01
	HR rhythm (sinus = 1/atrial fibrillation = 2/paced = 3)	–0.66 ± 0.26	0.01
	History of any neoplasm (NO = 0/YES = 1)	–2.18 ± 0.82	< 0.01
Social diversion	Gender (female = 0/male = 1)	–0.73 ± 0.32	0.02
	History of ICD implantation (NO = 0/YES = 1)	–0.66 ± 0.28	0.02

ACEI/ARB — angiotensin-converting enzyme inhibitor and/or angiotensin receptor blocker; HR — heart rate; ICD — implantable cardioverter-defibrillator; NYHA — New York Heart Association scale; SD — standard error

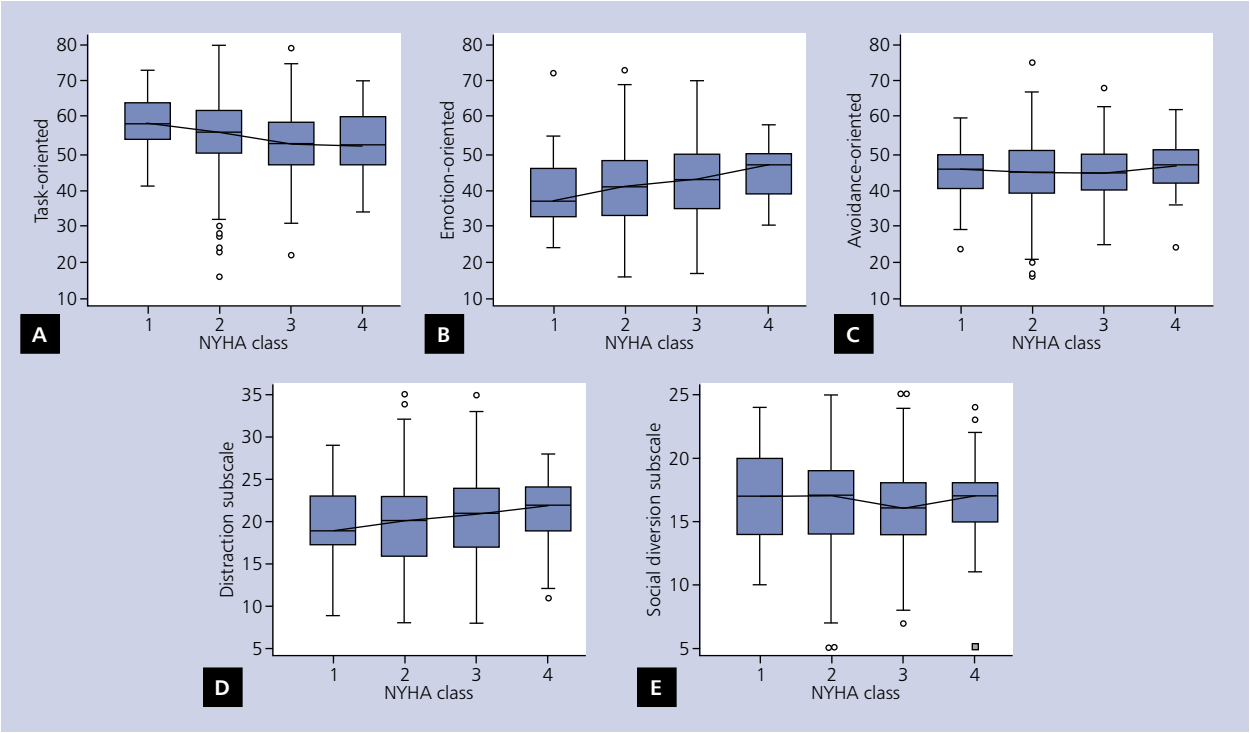

Figure 1. Coping Inventory for Stressful Situations (CISS) stress coping strategy by New York heart Association (NYHA) class (median and IQR); **A.** Task-oriented; **B.** Emotion-oriented; **C.** Avoidance-oriented; **D.** Distraction subscale of avoidance-oriented strategy; **E.** Social diversion subscale avoidance-oriented strategy

provided evidence for the high prevalence of favourable task-oriented coping strategies, followed by avoidance-oriented and emotion-oriented strategies for coping with stress due to illness.

We found an inverse relationship between NYHA class and the task-oriented approach (Fig. 1A), and conversely, a positive correlation between higher NYHA class and emotion-oriented stress management (Fig. 1B). As previously

shown in a group of men with moderate HF, emotion-oriented stress coping is associated with more pronounced depressive tendencies and sense of lack of control over the disease [8]. This style of coping was also more frequently utilised by patients with diabetes type 2, which was accompanied by impaired quality of life and more pronounced depressive symptoms [9]. The symptomatology of the patients was inextricably connected with the self-rated physical functioning and subjective perception of the progression of the disease. Eisenberg et al. [10] concluded that avoidance coping, along with anxiety, was significantly related with impaired physical functioning and thereby more symptomatic disease.

The inverse relationship of task- and emotion-oriented coping and symptomatology of HF might be related to their effects on emotional status. Lewandowska et al. [11] confirmed that task-oriented management exerted a positive impact on emotions in moderate asthma, whereas avoidance-oriented coping performed better in severe forms of the disease. Also, task-oriented strategies might be more efficient in situations amenable to control, whilst an emotion-focused one may be more helpful in situations where there is less control [12]. This may explain why neoplastic disease [13] was an independent predictor of emotion-oriented coping strategies in this current analysis. The preference of emotion-oriented coping in women has been shown previously in depressive disorders, where females with depression handled stress mostly using an emotion-oriented strategy [14]. As far as avoidance coping is concerned, female participants tended to choose social interactions as a manner of lowering daily stress levels and displayed a preference for social diversion strategy.

Limitations of the study

Although the CAPS-LOCK-HF study aimed to enrol consecutive patients in each participating centre, selection bias cannot be excluded. Secondly, all applied psychological measures were by the self-reported CISS questionnaire, which may generate a potential risk of misinterpretation. As a result, our findings may not be able to be generalised beyond the study group from the participating centres. Furthermore, patients with more favourable stress management abilities might have been more inclined to participate than those who were more anxious and depressed. If so, then this may have shifted the balance towards a task-oriented approach. Finally, the cross-sectional design of the study makes it impossible to determine the causal relationship between coping style preference and symptomatic progression of HF. Accordingly, the study did not involve follow-up; thus, the relationship between stress coping strategy and treatment outcomes could not be established.

CONCLUSIONS

Patients with HFREF in Poland most commonly use favourable task-oriented coping strategies to overcome disease-related stress. The progression to more symptomatic stages of HF corresponds with a shift towards more emotion-oriented coping strategies with a potentially detrimental impact on therapy adherence. Routine evaluation of coping strategies should be considered in order to identify patients with supplementary needs for psychological support because this may improve treatment outcomes.

Conflict of interest: *none declared*

References

1. Scherer M, Himmel W, Stanske B et al. Psychological distress in primary care patients with heart failure: a longitudinal study. Br J Gen Pract, 2007; 57: 801–807.
2. Klein DM, Turvey CL, Pies CJ. Relationship of coping styles with quality of life and depressive symptoms in older heart failure patients. J Aging Health, 2007; 19: 22.
3. van der Wal MH, Jaarsma T, van Veldhuisen DJ. Non-compliance in patients with heart failure; how can we manage it? Eur J Heart Fail, 2005; 7: 5.
4. Doering LV, Dracup K, Caldwell MA et al. Is coping style linked to emotional states in heart failure patients? J Card Fail, 2004; 10: 344–349.
5. Janowski K, Kurpas D, Kusz J et al. Emotional control, styles of coping with stress and acceptance of illness among patients suffering from chronic somatic diseases. Stress Health, 2014; 30: 34–42.
6. Siennicka A, Gościńska-Bis K, Wilczek J et al. Perception of health control and self-efficacy in heart failure. Kardiol Pol, 2016; 74: 168–178. doi: 10.5603/KP.a2015.0137.
7. Strelau J, Jaworowska A, Wrześniewski K et al. Kwestionariusz Radzenia Sobie w Sytuacjach Stresowych CISS. Warszawa, Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego, 2005.
8. Rydlewska A, Krzysztofik J, Libergal J et al. Coping styles in patients with systolic heart failure. Przegl Lek, 2013; 70: 15–18.
9. Kalka D. The quality of life, symptoms of depression and coping with stress among individuals with type 2 diabetes: preliminary study. Psychiatr Pol, 2014; 48: 931–940.
10. Eisenberg SA, Shen BJ, Schwarz ER et al. Avoidant coping moderates the association between anxiety and patient-rated physical functioning in heart failure patients. J Behav Med, 2012; 35: 253–261.
11. Lewandowska K, Specjalski K, Jassem E et al. Style of coping with stress and emotional functioning in patients with asthma. Pneumonol Alergol Pol, 2009; 77: 31–36.
12. Park CL, Sacco SJ, Edmondson D. Expanding coping goodness-of-fit: religious coping, health locus of control, and depressed affect in heart failure patients. Anxiety Stress Coping, 2012; 25: 137–153.
13. Cardenal V, Cerezo MV, Martínez J et al. Personality, emotions and coping styles: predictive value for the evolution of cancer patients. Span J Psychol, 2012; 15: 756.
14. Tomczak-Witych A. Coping with stress strategies among female patients suffering from a depression. Psychiatr Pol, 2006; 40: 491–502.

Cite this article as: Krzych ŁJ, Wybraniec MT, Siennicka A et al. A study to evaluate the prevalence and determinants of stress coping strategies in heart failure patients in Poland (CAPS-LOCK-HF sub-study). Kardiol Pol, 2016; 74: 1327–1331. doi: 10.5603/KP.a2016.0109.

Analiza rozpowszechnienia i czynników predykcyjnych różnych stylów radzenia sobie ze stresem w grupie pacjentów z niewydolnością serca z upośledzoną funkcją skurczową lewej komory (CAPS-LOCK-HF)

Łukasz J. Krzych[1], Maciej T. Wybraniec[2], Agnieszka Siennicka[3, 4, 5], Belinda Lees[6], Kinga Gościńska-Bis[7], Maciej Wójcik[8], Robert Błaszczyk[8], Filip M. Szymański[9], Michał Orszulak[2], Błażej Michalski[8], Karol Kamiński[11], Grzegorz Kopeć[12], Anna Hrynkiewicz-Szymańska[13], Ewa A. Jankowska[4, 5, 14]

[1]Katedra i Klinika Anestezjologii i Intensywnej Terapii, Wydział Lekarski w Katowicach, Śląski Uniwersytet Medyczny, Katowice; [2]I Katedra i Klinika Kardiologii, Wydział Lekarski w Katowicach, Śląski Uniwersytet Medyczny w Katowicach, SPSK nr 7 SUM w Katowicach, Górnośląskie Centrum Medyczne, Katowice; [3]Zakład Fizjologii, Uniwersytet Medyczny we Wrocławiu, Wrocław; [4]Klinika Kardiologii, Ośrodek Chorób Serca, 4. Wojskowy Szpital Kliniczny z Poliklinika, Wrocław; [5]Klinika Chorób Serca, Uniwersytet Medyczny we Wrocławiu, Wrocław; [6]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, Anglia; [7]Klinika Elektrokardiologii, Śląski Uniwersytet Medyczny, Górnośląskie Centrum Medyczne, Katowice; [8]Klinika Kardiologii, Uniwersytet Medyczny w Lublinie, Lublin; [9]I Klinika Kardiologii, Warszawski Uniwersytet Medyczny, Warszawa; [10]Katedra i Klinika Kardiologii, Uniwersytet Medyczny w Łodzi, Łódź; [11]Klinika Kardiologii, Uniwersytet Medyczny w Białymstoku, Białystok; [12]Klinika Chorób Serca i Naczyń, *Collegium Medicum*, Uniwersytet Jagielloński, Szpital im. Jana Pawła II, Kraków; [13]Klinika Kardiologii, Nadciśnienia Tętniczego i Chorób Wewnętrznych, Warszawski Uniwersytet Medyczny, Warszawa; [14]Samodzielna Pracownia Badań Układu Krążenia, Katedra Chorób Serca, Wydział Nauk o Zdrowiu, Uniwersytet Medyczny we Wrocławiu, Wrocław

Streszczenie

Wstęp: Rozpoznanie niewydolności serca (HF) stanowi dla pacjentów znaczne obciążenie psychiczne, które uruchamia różne mechanizmy radzenia sobie ze stresem i może wpływać na odległe wyniki leczenia tej jednostki chorobowej.

Cel: Celem badania była ocena rozpowszechnienia oraz charakterystyka różnych stylów radzenia sobie ze stresem w grupie polskich pacjentów z HF z upośledzoną funkcją skurczową lewej komory (HFREF).

Metody: Niniejszy artykuł stanowi część wieloośrodkowego badania o akronimie CAPS-LOCK-HF oceniającego psychologiczny stan pacjentów z HFREF. Kryteria włączenia uwzględniały > 6-miesięczny wywiad HFREF i stabilny stan kliniczny przez ≥ 3 miesiące poprzedzające przyjęcie, a także obniżoną frakcję wyrzutową lewej komory (LVEF) < 45%. Dane na temat demograficznych i klinicznych zmiennych zostały zaczerpnięte z dostarczonej dokumentacji medycznej. Wszyscy pacjenci zostali poddani zestawowi testów psychologicznych z uwzględnieniem Kwestionariusza Radzenia Sobie w Sytuacjach Stresowych (CISS).

Wyniki: Do badania włączono 758 osób (599 mężczyzn; 79%). Mediana wieku wyniosła 64 (58–71) lata, a mediana LVEF — 33% (25–40%). Pacjenci z HFREF najczęściej posługiwali się zadaniowym stylem radzenia sobie ze stresem (55 pkt; 49–61 pkt), a rzadziej stylem zorientowanym na unikanie (45 pkt; 39–50 pkt) i emocje (41 pkt; 34–48 pkt). W przypadku stylu zorientowanego na unikanie pacjenci częściej wykorzystywali jego podtyp polegający na angażowaniu się w czynności zastępcze (20 pkt; 16–23 pkt), niż podtyp związany z poszukiwaniem kontaktów towarzyskich (16 pkt; 14–19 pkt). Analiza regresji wieloczynnikowej wykazała, że niezależnymi predyktorami stylu zorientowanego na zadanie były wyższa klasa czynnościowa wg *New York Heart Association* (NYHA) i niższe skurczowe ciśnienie tętnicze krwi. Styl zorientowany na emocje częściej występował u kobiet, w zakresie wyższych przedziałów klasy NYHA i u pacjentów nieprzyjmujących inhibitorów konwertazy angiotensyny. Pacjenci wybierający styl zorientowany na unikanie częściej cechowali się obecnością rytmu zatokowego i brakiem choroby nowotworowej w wywiadzie.

Wnioski: Chorzy z HFREF najczęściej posługiwali się zadaniowym stylem radzenia sobie ze stresem. Niemniej jednak, w grupie kobiet i u pacjentów z większym natężeniem objawów dominował potencjalnie niekorzystny styl zorientowany na emocje.

Słowa kluczowe: Kwestionariusz Radzenia Sobie w Sytuacjach Stresowych, CISS, radzenie sobie ze stresem, niewydolność serca, HFREF

Kardiol Pol 2016; 74, 11: 1327–1331

Adres do korespondencji:
dr n. med. Maciej T. Wybraniec, I Katedra i Klinika Kardiologii, Wydział Lekarski w Katowicach, Śląski Uniwersytet Medyczny w Katowicach, SPSK nr 7 SUM w Katowicach, Górnośląskie Centrum Medyczne, ul. Ziołowa 47, 40–635 Katowice, tel: +48 32 359 88 90, faks: +48 32 2523032, e-mail: wybraniec@os.pl
Praca wpłynęła: 20.04.2016 r. **Zaakceptowana do druku:** 21.06.2016 r. **Data publikacji AoP:** 08.07.2016 r.